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EXAMINER

KOPEC, MARK T

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/501,603

Applicant(s)

GAO ET AL.

Examiner

Mark Kopec

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

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This application is a 371 of PCT/US03/05771 (filed 2/26/03). Claims 1-15 are currently pending.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The references cited in the Search Report filed 7/17/04 have been considered, but will not be listed on any patent resulting from this application because they were not provided on a separate list in compliance with 37 CFR 1.98(a)(1). In order to have the references printed on such resulting patent, a separate listing, preferably on a PTO/SB/08A and 08B form, must be filed within the set period for reply to this Office action.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims require/recite an organic conducting polymer doped or overdoped with protonic acid (component A) and a plasticizer 0.01 to 40% (component B). The specification disclosure (and some dependent claims) recite that the plasticizer (component B) is "selected from the group consisting of alkyl or aryl sulfonic acid". These sulfonic acid materials are protonic dopants encompassed by "...doped with organic protonic acid" in component A. Claims in which one component is defined so broadly that it reads on a second required component are considered indefinite. See MPEP 2173.05(0). "...where a claim directed to a device can be read to include the same element twice, the claim may be indefinite". Ex parte Kristensen, 10 USPQ2d 1701 (Bd. Pat. App. & Inter. 1989).

For examination purposes, the examiner construes an organic conducting polymer doped with excess protonic acid to meet the limitations for both component A and component B.

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Claim 13 provides for the use of the composition(s) of claim 1 or 3, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 13 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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Claims 1-10 and 13-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 16-55 of copending Application No. 10/374,875. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant claims and the claims of 10/374,875 are drawn to conductive compositions comprising organic conducting polymer and plasticizer. The instant claims are merely broader in scope with respect to the plasticizer component (fully encompass 10/374,875).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the

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United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that

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was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 9-15 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ikkala (Synthetic metals).

As stated in the above 112 rejection, the examiner construes an organic conducting polymer doped with excess protonic acid to meet the limitations for both component A and component B.

Ikkala (Synthetic metals) discloses PANI/DBSA complexes. The reference specifically teaches "...extra DBSA yields plasticized and protonated melt processable complexes" (Abstract; Introduction). The ratio of DBSA to EB (emeraldine base) is varied from 0.5 to 4 (Methods; Figure 1).

The reference is anticipatory.

In the event that any minor modifications are necessary to meet the claimed limitations, such as selection of a particular surfactant, such modifications are well within the purview of the skilled artisan.

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Claims 1-15 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kay Hyeok An "High Capacitance Supercapacitors...".

As stated in the above 112 rejection, the examiner construes an organic conducting polymer doped with excess protonic acid to meet the limitations for both component A and component B.

Kay Hyeok An "High Capacitance Supercapacitors..." discloses single-walled carbon nanotube/polypyrrole hybrid electrodes (Abstract; Introduction). Experimental section discloses p-toluenesulfonate dopant, and mixing the SWNT-Ppy complex with PTFE (page 676).

The reference is anticipatory.

In the event that any minor modifications are necessary to meet the claimed limitations, such as selection of a particular surfactant or utilization of multi-walled nanotubes, such modifications are well within the purview of the skilled artisan.

Claims 1, 2, 9-15 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kulkarni et al (5,595,689).

Kulkarni et al disclose A blend according to the invention includes a matrix material selected from thermoplastic polymers,

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monomers and polymer precursors and combinations thereof, and an intrinsically conductive polymer and a non-polymeric highly polar additive, disbursed into a polymer blend and having a conductivity of greater than about 2.5 S/cm. A composition according to the invention includes a precursor selected from polymers and polymerizable monomers, an intrinsically conductive polymer with a conductivity of about 1 to 5 S/cm and a non-polymeric polar additive having a conductivity of greater than that of the blend resulting in a blend having a conductivity greater than about 2 to 5 s/cm. A blend having thermo and conductive stability includes an intrinsically conductive polymer, an insulating thermoplastic polymer, an insulating thermoplastic polymer and an ester-free plasticizer which is thermally stable to at least about 240.degree. C., the blend having a conductivity of greater than 10^{-2} S/cm. A method for preparing such compositions and blends is also provided (Abstract). A formulation and method of preparing blends with doped polyaniline, doped with conventional dopants such as hydrochloric and organic sulfonic acids with conductivity greater than about 2.5 S/cm is disclosed (Col 3, lines 38-48). Preferably the polymer blend contains from 1 to 40 parts of polyaniline and 1 to 40 parts of the non-polymeric polar material and 98 to 20 parts of matrix polymer, which can be

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thermoplastic, thermoset or a polymerizable polymer precursor or monomer (Col 4, lines 27-40). The dispersion may also contain other additives such as processing aids, dispersants and plasticizers. When the dispersion contains such additives, the amount of thermoplastic is reduced by the amount corresponding to the amount of additive (Col 4, lines 52-56; example 7).

The reference is anticipatory.

In the event that any minor modifications are necessary to meet the claimed limitations, such as selection of a particular surfactant percentage, such modifications are well within the purview of the skilled artisan.

Claims 1-4 and 9-15 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ikkala et al (5,783,111).

Ikkala discloses electrically conducting polyaniline and particular substituted aromatic compounds that simultaneously form hydrogen bonds and ring-ring interactions with, respectively, the NH-groups and the six-membered rings of the conducting polyanilines (Abstract). Particularly preferred for the use in the practice of this invention, is the electrically conducting polyaniline that is derived from the non-conducting unsubstituted polyaniline and protonated to its electrically conducting form by the use of one or more protonic acids that

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have a pKa value of less than about 3.0. Preferred protonic acids are those that protonate the polyaniline to form a salt complex, having an electrical conductivity of greater than about 10^{-6} S/cm. Among the preferred protonic acids, particularly preferred are those that belong to the class of acids that impart a conductivity of greater than about 10^{-3} S/cm to the salt complex with polyaniline. Amongst these particularly preferred embodiments, most preferred are those embodiments in which said polyaniline salt complex has a conductivity greater than about 1 S/cm. Protonic acids are well known as dopants in the conductive polymer art (Col 7, line 63 to Col 8, line 13). The amount of insulating substrates in blends with the conductive polyaniline salt complexes and substituted aromatic compounds according to the present invention may vary widely, and is dependent on the desired level of conductivity. Hence, the content of insulating substrates ranges from at least about 1% by weight to about 99.95% by weight, preferably from about 5% by weight to about 99.9% by weight, and most preferably from about 10% by weight to about 99.5% by weight. Optional common additional components may be included in the compositions of the present invention. Examples of such additional components include other conductive polymers, other polymers such as poly(3-alkylthiophenes) which may become conductive upon doping,

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graphite, metal conductors, reinforcing fibers, inert fillers (such as clays and glass), dyes, common plasticizers, and the like (Col 13, line 62 to Col 14, line 3).

The reference is anticipatory.

In the event that any minor modifications are necessary to meet the claimed limitations, such as selection of a particular percentage, such modifications are well within the purview of the skilled artisan.

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikkala et al (5,783,111) as applied to claims 1-4 and 9-15 above, and further in view of Deng et al (Chinese Chem. Lett).

Ikkala is relied upon as set forth above. While the reference teaches the addition of various adjuncts, such as graphite, metal conductors, reinforcing fibers, inert fillers (such as clays and glass), dyes, common plasticizers, and the like, there is no specific mention of carbon nanotubes.

Deng specifically teaches blends (hybrid materials) of polyaniline and carbon nanotube (Abstract). The reference specifically teaches that nanotubes possess superior mechanical strength, flexibility and conductivity, and that the addition of such results in conductive passageways (page 1037). Accordingly, it would have been obvious to add carbon nanotubes to the

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compositions of Ikkala. Deng teaches the desirability of such a combination.

In view of the foregoing, the above claims have failed to patentably distinguish over the applied art.

The remaining references listed on forms 892 and 1449 have been reviewed by the examiner and are considered to be cumulative to or less material than the prior art references relied upon in the rejection above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Kopec whose telephone number is (571) 272-1319. The examiner can normally be reached on Monday - Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mark Kopec
Primary Examiner
Art Unit 1751

MK

September 28, 2005